UCRL-AR-146618

ASBESTOS MANAGEMENT

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November 2001

U.S. Department of Energy
Lawrence Livermore National Laboratory

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This work was performed under the auspices of the U. S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under Contract No. W-7405-Eng-48.

ASBESTOS MANAGEMENT

1. Scope and purpose.

This standard requires the identification of friable and nonfriable asbestos-containing material (ACM) at the Lawrence Livermore National Laboratory (LLNL) by visually inspecting buildings for such materials, sampling such materials if they are not assumed to be ACM, and having samples analyzed by appropriate techniques. In addition, persons who conduct inspections, re-inspections or perform response actions shall be accredited to perform these activities. This standard also includes recordkeeping requirements. Duties may be contractually delegated under this standard, but the responsibility of LLNL for the proper performance of those duties remains.

2. Definitions.

Term	**Definition**
Act	The Toxic Substances Control Act (TSCA), 15 U.S.C. 2601, et seq.
Accessible	When referring to ACM means that the material is subject to disturbance by building occupants or custodial or maintenance personnel in the course of their normal activities.
Accredited or accreditation	When referring to a person or laboratory means that such person or laboratory is accredited in accordance with section 206 of Title II of the Act.
Air erosion	The passage of air over friable ACBM which may result in the release of asbestos fibers.
Asbestos	The asbestiform varieties of: chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite-grunerite); anthophyllite; tremolite; and actinolite.
Asbestos-containing material (ACM)	Any material or product which contains more than 1 percent asbestos.
Asbestos-containing building material (ACBM)	Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a building.
Asbestos debris	Pieces of ACBM that can be identified by color, texture, or composition, or dust, if the dust is determined by an accredited inspector to be ACM.
Building	A structure used for an office, laboratory, shop, warehouse, and any portico or covered exterior hallway or walkway, or any exterior portion of a mechanical system used to condition interior space.
Damaged ACM	Material that is no longer intact, so that it is more likely that airborne asbestos fibers can or will be released. See the definitions for “potential” and “significant damage” for further detail.
Encapsulation	The treatment of ACBM with a material that surrounds or

Term	Definition
	embeds asbestos fibers in an adhesive matrix to prevent the release of fibers
Enclosure	An airtight, impermeable, permanent barrier around ACBM to prevent the release of asbestos fibers into the air.
Fiber release episode	Any uncontrolled or unintentional disturbance of ACBM resulting in visible emission.
Friable	ACM that, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure. Includes previously nonfriable material that has been damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure.
Functional space	A room, group of rooms, or homogeneous area (including crawl spaces or the space between a dropped ceiling and the floor or roof deck above), such as classroom(s), a cafeteria, gymnasium, hallway(s), designated by a person accredited to prepare management plans, design abatement projects, or conduct response actions.
High-efficiency particulate air (HEPA)	A filtering system capable of trapping and retaining at least 99.97 percent of all monodispersed particles 0.3 µm in diameter or larger.
Homogeneous area	An area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture
Miscellaneous ACM	Miscellaneous material that is ACM in a building.
Miscellaneous material	Interior building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and does not include surfacing material or thermal system insulation.
Nonfriable	Material in a building which when dry may not be crumbled, pulverized, or reduced to powder by hand pressure.
Operations and maintenance program	A program of work practices to maintain friable ACBM in good condition, ensure clean up of asbestos fibers previously released, and prevent further release by minimizing and controlling friable ACBM disturbance or damage.
Potential damage	Circumstances in which: (1) ACBM is in an area regularly used by building occupants, including maintenance personnel, in the course of their normal activities. (2) there is a reasonable likelihood that the material or its covering will become damaged, deteriorated, or delaminated due to factors such as building use, changes in operations and maintenance practices, air erosion, vibration, etc.
Preventive measures	Actions taken to reduce disturbance of ACBM or otherwise

Term	Definition
	eliminate the reasonable likelihood of the material's becoming damaged or significantly damaged.
Removal	The taking out or the stripping of substantially all ACBM from a damaged area, a functional space, or a homogeneous area in a building.
Repair	Returning damaged ACBM to an undamaged condition or to an intact state so as to prevent fiber release.
Response action	A method, including removal, encapsulation, enclosure, repair, operations and maintenance, that protects human health and the environment from friable ACBM.
Routine maintenance area	An area, such as a boiler room or mechanical room, that is not normally frequented by building occupants and in which maintenance employees or contract workers regularly conduct maintenance activities.
Significantly damaged ACM	Damaged ACM where the damage is extensive and severe and there is a strong possibility that asbestos fibers may become friable. Note that this may include non-friable material that is being abraded, such as transite, that is being crushed or eroded, and there is a strong possibility that asbestos fibers may become friable.
State	A State, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the Northern Marianas, the Trust Territory of the Pacific Islands, and the Virgin Islands.
Surfacing ACM	Surfacing material that is ACM.
Surfacing material	Material in a building that is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.
Thermal system insulation	Material in a building applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.
Thermal system insulation ACM	Thermal system insulation that is ACM.
Vibration	The periodic motion of friable ACBM which may result in the release of asbestos fibers.

3. General responsibilities.

The employer shall:

- Ensure that all custodial and maintenance employees are properly trained as required by this standard and other applicable Federal and/or State regulations (e.g., the Occupational Safety and Health Administration asbestos standard for construction, the EPA worker protection rule, or applicable State regulations).
- Ensure that short-term workers (e.g., telephone repair workers, utility workers, or exterminators) who may come in contact with asbestos in a are provided information regarding the locations of ACBM and suspected ACBM assumed to be ACM.
- Ensure that warning labels are posted.

4. Inspection and re-inspections.

4.0 General

A formal program shall be established to inspect and re-inspect all suspected ACBM and following the requirements of Sections 4.1, "Inspection," and 4.2, "Re-inspection." Additionally, informal inspections shall be conducted by

- Plant Engineering Department crafts,
- Hazards Control Department industrial hygienists and health and safety technicians,
- Program facility management and facility points of contact.

Results of these inspections shall be communicated to the Plant Engineering Department for repair or removal of damaged ACBM in accordance with Section *, "Response Actions."

4.1 Inspection.

All LLNL buildings shall be inspected prior to use. In the event that emergency use of an uninspected building is necessitated, such buildings shall be inspected within 30 days after commencement of such use.

Each inspection shall be made by an accredited inspector.

For each area of a building, except as excluded under Section 11, "Exclusion," each person performing an inspection shall:

(i) Visually inspect the area to identify the locations of all suspected ACBM.

(ii) Determine if suspected ACBM is becoming friable.

(iii) Identify all homogeneous areas of friable suspected ACBM and all homogeneous areas of nonfriable suspected ACBM.

(iv) Assume that some or all of the homogeneous areas are ACM, and, for each homogeneous area that is not assumed to be ACM, collect and submit for analysis bulk samples under Sections 5, "Sampling," and 6, "Analysis."

(v) Assess, under Section 7, "Assessment," friable material in areas where samples are collected, assumed to be ACBM, and or have been identified during a previous inspection.

(vi) Record the following and submit a copy of such record to the O&M officer within 30 days of the inspection:

(A) An inspection report with the date of the inspection signed by each accredited person making the inspection.

(B) An inventory of the locations of the homogeneous areas where samples are collected, exact location where each bulk sample is collected, dates that samples are collected, homogeneous areas where friable suspected ACBM is assumed to be ACM, and homogeneous areas where nonfriable suspected ACBM is assumed to be ACM.

(C) A list of whether the homogeneous areas identified are surfacing material, thermal system insulation, or miscellaneous material.

4.2 Re-inspection.

At least once every 5 years after a management plan is in effect, LLNL shall conduct a re-inspection of all friable and nonfriable known or assumed ACBM in each building that they lease, own, or otherwise use as a building.

Each inspection shall be made by an accredited inspector.

For each area of a building, each person performing a re-inspection shall:

(i) Visually re-inspect, and reassess, the condition of all friable known or assumed ACBM.

(ii) Visually inspect material that was previously considered nonfriable ACBM to determine whether it has become friable since the last inspection or re-inspection.

(iii) For each homogeneous area of newly friable material that has been assumed to be ACBM, bulk samples may be collected and submitted for analysis.

(iv) Assess the condition of the friable or non-friable ACBM.

(v) Immediately notify (same day) the O&M officer of all significant damaged ACBM, so that the repairs can be scheduled quickly (see Section 8).

(vi) Record the following and submit a copy of such record to the O&M officer within 30 days of the re-inspection:

(A) The date of the re-inspection, the name and signature of the person making the re-inspection, State of accreditation and any changes in the condition of known or assumed ACBM.

(B) The exact locations where samples are collected during the re-inspection, the name and signature of each accredited inspector who collected the samples,

(C) Any assessments or reassessments made of friable material, the name and signature of the accredited inspector making the assessments, and state of accreditation.

4.3 Enclosed or Encapsulated Thermal system Insulation.

Thermal system insulation that has retained its structural integrity and that has an undamaged protective jacket or wrap that prevents fiber release shall be treated as nonfriable and therefore is subject only to periodic surveillance and preventive measures as necessary.

5. Sampling.

5.1 Surfacing material.

An accredited inspector shall collect, in a statistically random manner that is representative of the homogeneous area, bulk samples from each homogeneous area of friable surfacing material that is not assumed to be ACM, and shall collect the samples as follows:

- At least three bulk samples shall be collected from each homogeneous area that is 1,000 ft^2 or less, except as provided in Section 6, "Analysis."
- At least five bulk samples shall be collected from each homogeneous area that is greater than 1,000 ft^2 but less than or equal to 5,000 ft^2, except as provided in Section 6, "Analysis".
- At least seven bulk samples shall be collected from each homogeneous area that is greater than 5,000 ft^2, except as provided in Section 6, "Analysis."

5.2 Thermal system insulation.

Except as provided below and Section 6, "Analysis," an accredited inspector shall collect, in a randomly distributed manner, at least three bulk samples from each homogeneous area of thermal system insulation that is not assumed to be ACM.

Collect at least one bulk sample from each homogeneous area of patched thermal system insulation that is not assumed to be ACM if the patched section is less than 6 linear or square feet.

In a manner sufficient to determine whether the material is ACM or not ACM, collect bulk samples from each insulated mechanical system that is not assumed to be ACM where cement or plaster is used on fittings such as tees, elbows, hangers, or valves.

Bulk samples are not required to be collected from any homogeneous area where the accredited inspector has determined that the thermal system insulation is fiberglass, foam glass, rubber, or other non-ACBM.

5.3 Miscellaneous material.

In a manner sufficient to determine whether material is ACM or not ACM, an accredited inspector shall collect bulk samples from each homogeneous area of friable miscellaneous material that may be ACM.

5.4 Nonfriable suspected ACBM.

Homogeneous areas of nonfriable suspect ACBM shall be sampled to determine whether the material is ACM.

6. Analysis.

LLNL shall have bulk samples analyzed by laboratories which have received accreditation for polarized light microscopy (PLM) analysis.

Bulk samples shall not be composited for analysis and shall be analyzed for asbestos.

A homogeneous area

- is considered not to contain ACM only if the results of all samples required to be collected from the area show asbestos in amounts of 1 percent or less, and

- shall be determined to contain ACM based on a finding that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1 percent.

7. Assessment.

LLNL shall select a person accredited to develop management plans to review the results of each inspection, re-inspection, and assessment for the building and to conduct any other necessary activities in order to recommend in writing to the appropriate response actions. The accredited person shall sign and date the recommendation, provide his or her state of accreditation.

8. Response actions.

LLNL shall select and implement in a timely manner the appropriate response actions in this section consistent with the assessment conducted in Section 7, "Assessment." The response actions selected shall be sufficient to protect human health and the environment. Nothing in this section shall be construed to prohibit removal of ACBM from a building at any time, should removal be the preferred response action.

In selecting the response action from among those which meet the definitional standards in Section 2, "Definitions," LLNL shall determine which of these response actions protects human health and the environment, is least burdensome, and is most cost effective in the long term. Local circumstances, such as occupancy and use patterns within the building will be considered.

8.1 Completion of response actions.

At the conclusion of any action to remove, encapsulate, or enclose ACBM or material assumed to be ACBM:

- a person designated by LLNL shall visually inspect each functional space where such action was conducted to determine whether the action has been properly completed;
- whenever air samples are collected as part of a response action, LLNL shall have those air samples analyzed for asbestos using laboratories accredited to use transmission electron microscopy (TEM) or, laboratories enrolled in the American Industrial Hygiene Association Proficiency Analytical Testing Program for phase contrast microscopy (PCM), as appropriate.

To determine the amount of ACBM affected under this section, LLNL shall add the total square or linear footage of ACBM within the containment barriers used to isolate the functional space for the action to remove, encapsulate, or enclose the ACBM. Contiguous portions of material subject to such action conducted concurrently or at approximately the same time within the same building shall not be separated to qualify under paragraph (i)(5), of this section.

9. Operations and maintenance.

9.1 Applicability.

LLNL shall implement an operations, maintenance, and repair (O&M) program under this section whenever any friable ACBM is present or assumed to be present in a building that it leases, owns, or otherwise uses. Any material identified as nonfriable ACBM or nonfriable assumed ACBM shall also be included in the O&M program when the material is about to become friable as a result of activities performed in the building.

9.2 Operations and maintenance activities.

LLNL shall ensure that the procedures described below to protect building occupants shall be followed for any operations and maintenance activities disturbing friable ACBM:

- Restrict entry into the area by persons other than those necessary to perform the maintenance project, either by physically isolating the area or by scheduling.
- Post signs to prevent entry by unauthorized persons.
- Shut off or temporarily modify the air-handling system and restrict other sources of air movement.
- Use work practices or other controls, such as, wet methods, protective clothing, HEPA-vacuums, mini-enclosures, glove bags, as necessary to inhibit the spread of any released fibers.
- Clean all fixtures or other components in the immediate work area.
- Place the asbestos debris and other cleaning materials in a sealed, leak-tight container.

9.3 Maintenance activities other than small-scale, short-duration.

The response action for any maintenance activities disturbing friable ACBM, other than small-scale, short-duration maintenance activities, shall be designed by persons accredited to design response actions and conducted by persons accredited to conduct response actions.

9.4 Fiber release episodes

9.4.1 Minor fiber release episode.

LLNL shall ensure that the procedures described below are followed in the event of a minor fiber release episode (i.e., the falling or dislodging of 3 square or linear feet or less of friable ACBM):

- Thoroughly saturate the debris using wet methods.
- Clean the area, as described in paragraph (e) of this section.
- Place the asbestos debris in a sealed, leak-tight container.
- Repair the area of damaged ACM with materials such as asbestos-free spackling, plaster, cement, or insulation, or seal with latex paint or an encapsulant.

9.4.2 Major fiber release episode.

LLNL shall ensure that the procedures described below are followed in the event of a major fiber release episode (i.e., the falling or dislodging of more than 3 square or linear feet of friable ACBM):

- Restrict entry into the area and post signs to prevent entry into the area by persons other than those necessary to perform the response action.
- Shut off or temporarily modify the air-handling system to prevent the distribution of fibers to other areas in the building.
- The response action for any major fiber release episode must be designed by persons accredited to design response actions and conducted by persons accredited to conduct response actions.

10. Training and periodic surveillance.

10.1 Training.

LLNL shall ensure, prior to the implementation of the O&M plan, that all members of its maintenance and custodial staff (custodians, electricians, heating/air conditioning engineers, plumbers, etc.) who may work in a building that contains ACBM receive awareness training, whether or not they are required to work with ACBM. New custodial and maintenance employees shall be trained within 60 days after commencement of employment. Training shall include, but not be limited to:

- Information regarding asbestos and its various uses and forms.
- Information on the health effects associated with asbestos exposure.
- Recognition of damage, deterioration, and delamination of ACBM..

LLNL shall ensure that all members of its maintenance staff who conduct any activities that will result in the disturbance of ACBM shall receive training described above and 14 hours of additional training. Additional training shall include, but not be limited to:

- Descriptions of the proper methods of handling ACBM.
- Hands-on training in the use of respiratory protection, other personal protection measures, and good work practices.

LLNL maintenance and custodial staff who have attended EPA-approved asbestos training or received equivalent training for O&M and periodic surveillance activities involving asbestos shall be considered trained for the purposes of this section.

10.2 Statutory Requirements.

The Asbestos School Hazard Reauthorization Act of 1990 (ASHARA), PL 101-637, revises the applicability of 40 CFR 763 Subpart E and makes its Appendix C, “Asbestos Model Accreditation Plan” a statutory requirement. This appendix defines training and continuing education requirements for the following classes of workers involved with asbestos work:

1. Workers
2. Contractor/supervisors
3. Inspectors
4. Management Planners
5. Project Designers
6. Project Monitors

To the extent that tasks are performed by these classes of LLNL workers, they shall meet the statutory training requirements.

11. Exclusions

An architect or project engineer responsible for the construction of a new building built after October 12, 1988, or an accredited inspector signs a statement that no ACBM was specified as a building material in any construction document for the building, or, to the best of his or her knowledge, no ACBM was used as a building material in the building. They shall submit a copy of the signed statement to the O&M Officer.

If ACBM is subsequently found in an area that had been previously identified as receiving an exclusion, LLNL shall have 180 days following the date of identification of ACBM to comply with this standard.

12. References

40 CFR 763 Subpart E, "Asbestos-Containing Materials in Schools"

Asbestos School Hazard Reauthorization Act of 1990 (ASHARA), PL 101-637

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